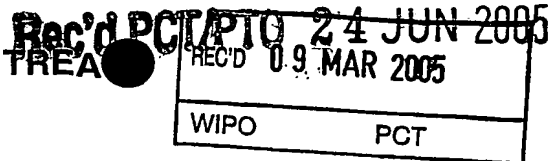


PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)





Applicant's or agent's file reference: 88TY1186	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/B 03/06163	International filing date (day/month/year) 23.12.2003	Priority date (day/month/year) 26.12.2002
International Patent Classification (IPC) or both national classification and IPC F01N5/02		
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
 - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.

- This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 18.03.2004	Date of completion of this report 09.03.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Nobre, S Telephone No. +31 70 340-4635 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IB 03/06163

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

3-26	as published
1, 2, 2a	received on 23.11.2004 with letter of 22.11.2004

Claims, Numbers

1-12	received on 11.02.2005 with letter of 10.02.2005
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Drawings, Sheets

1/11-11/11	as published
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-12
	No: Claims	
Inventive step (IS)	Yes: Claims	1-12
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

2. Citations and explanations

see separate sheet

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Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: PATENT ABSTRACTS OF JAPAN vol. 2000, no. 15, 6 April 2001 (2001-04-06) & JP
2000 352313 A (NISSAN MOTOR CO LTD), 19 December 2000 (2000-12-19)

D2: FR-A-2 698 909 (RENAULT) 10 June 1994 (1994-06-10)

The document D1 cited by the applicant is regarded as being the closest prior art to the
subject-matter of claim 1, and shows (cf. paragraphs [0037 - 0071], fig. 12)

An exhaust system comprising an exhaust passage that allows exhaust gas discharged
from an internal combustion engine (1) to pass therethrough;

a primary exhaust emission control unit (26) including a catalyst to purify the exhaust gas
and

a first exhaust heat collecting unit (3) including a thermoelectric element that
converts thermal energy of the exhaust gas into electric energy;

wherein the exhaust passage is divided into a first passage (25) provided with the
primary exhaust emission control unit (26) and a second passage (2) provided with the
first exhaust heat collecting device (3) including the thermoelectric element;
the exhaust system further comprising a control member (27) that is operated to change a
flow of the exhaust gas between the first passage (25) and the second passage (2).

an operation of the control member (27) is controlled based on the intake pressure of the
engine and the control member is operated such that the exhaust gas flows through the
first passage when the engine is under heavy load.

From which the subject-matter of claim 1 differs in that the operation of the control member
is controlled based on a temperature in the primary exhaust emission control unit;
the control member is operated such that the exhaust gas flows through the second

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passage when the temperature in the primary exhaust emission control unit exceeds a predetermined temperature and the predetermined temperature is determined based on an activation temperature range of the catalyst in the primary exhaust emission control unit.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as build a system with a catalyst and a thermoelectric element where the deterioration of the catalyst is avoided while at the same time the high energy conversion of a thermoelectric element is maintained.

Although document D2 discloses a system with a first and a second exhaust passages where a bypass passage is used depending of the catalyst temperature, the skilled person would not regard it as a normal option to include this feature in the exhaust system described in document D1 in order to solve the problem posed.

The solution to this problem proposed in claim 1 of the present application is therefore considered as involving an inventive step (Article 33(3) PCT).

Claims 2 to 12 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.